DPP
DAILY PRACTICE PROBLEMS

Class : XIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 6

Topic :- Plant Growth & Development

1 **(a)**
The differentiation in plants is open, because cells/tissue arising out of the same meristem have different structure at the maturity. The cells tissues arising out of meristem region the capacity of division under certain condition

2 **(c)**
In Arithmetic Growth, following mitotic cell division, only one daughter cell continues to divide, while other differentiate and mature
In Geometrical Growth, both progeny cells following the mitotic cell division retain the ability to divide and continue to do so

3 **(b)**
One of the most dramatic effect of GA is its induction of α-hydrolytic enzymes like proteases, α amylases, lipases, which help to mobilise stored nutrients in the aleurone layer of endosperm of germinating barley seeds and cereal grains.

4 **(d)**
The cells in the root and shoot apex shows the following characteristics
(i) rich in protoplasm
(ii) conspicuous nuclei
(iii) cell wall are primary in nature, thin and cellulosic with abundant plasmodesmata connection

5 **(d)**
Ethylene causes acceleration of fruit ripening in tomato and maleic hydrazide (an auxin) delays sprouting of potato tubers. Precursors of both of these phytohormones are produced due to the catalytic activity of pyruvate dehydrogenase complex.

6 **(c)**
The movement of auxins is basipetal in stem, *i.e.,* from apex to base and acropetal in roots, *i.e.,* from tip towards shoot.

7 **(d)**
Geometric growth curve shows 'S'-shaped curve. *'S'-shaped have has following phases*
(i) Lag phase (ii) Log phase
(iii) Stationary phase
(iv) Diminising of growth phase.
Geometrical Growth In most system the initial growth is slow (lag phase), and it increases there after at a exponential rate (log or exponential phase). Both the progeny cells following mitotic cell division

retains the ability to divide and continue to do so. However due to the limited nutrient supply, the growth slows down leading to stationary phase. If we plot the parameter of growth against time, a typical sigmoid curve is obtained.

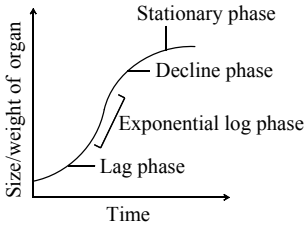
It has following stages

1. During lag phase, organism adapt themselves to growth conditions. It is the period where the individual organism are maturing and not yet able to divide. During the lag phases of the bacterial growth cycle, synthesis of RNA, enzyme and other molecules occurs

2. The log phase (sometimes called the logarithmic phase or the exponential phase) is a period characterised by cell doubling. The number of new organism appering per unit time is proportional to the present population.

3. The stationary phase is often due to a growth-limiting factor such as the depletion of an essential nutrient, and/or the formation of an inhibitory product such as an organic acid. Stationary phase results from a situation in which growth rate and death rate are equal

4. Death phase, organism run out of nutrients and die

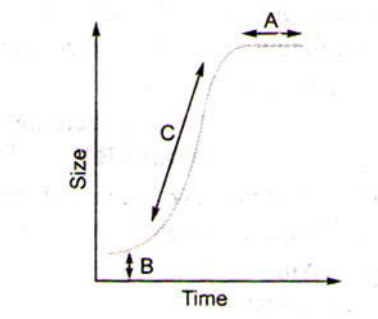


8 **(c)**

The cells proximal (just next, away from tip) to the meristematic zone represents the phase of elongation. Increased vacuolation, cell enlargement and new cell wall deposition are the characteristics of the cells in this phase

9 **(b)**

It is the graphic representation of growth against time. If total growth is plotted against time, an S-shaped or sigmoid curve is obtained. Where, **A** is the steady state phase. **B** is the lag phase and **C** is the log phase.



10 **(a)**

Juvenile phase is followed by adult phase. Transition from juvenile to adult is gradual in many cases, *e.g.*, lpomea, cotton. It is called homoblastic growth. In others, the transition is abrupt. This is called heteroblastic development

11 **(c)**

Higher plants possess specific areas, which take part in the formation of new cells. These area are called meristems. *Meristems are of three types*

(i) Apical meristem

(ii) Intercalary meristem

(ii) Lateral meristem

12 **(a)**

Auxin induces perthenocarpy in tomatoes.

13 **(c)**

Temperature between 0°C to 5°C is required during vernalisation

14 **(b)**

Gibberellins help in cell growth of stem, leaves and other aerial parts.

15 **(a)**

The effect of gibberellins had been know in Japan for over a century where a certain rice plant were found to suffer from 'Bakane' (foolish seedlings) disease. The disease was found by Kurosawa (1926) and it is caused by a fungus (*Gibberella fujikuroi*)

16 **(d)**

The first cytokinin was discovered from, degraded autoclaved herring sperm DNA by **Miller et al.** 1995. It is called **kinetin** (6-furfurly amino-purine). Kinetin does not occur naturally.

Many synthetic auxins are also manufactured. The important ones are 2, 4, D (2, 4-dichlorophenoxy acetic acid). 2, 4, 5-(2, 4, 5-Trichlorophenoxyacetic acid) and Naphthalene acetic acid (NAA).

17 **(d)**

Auxins induce parthenocarpy in a number of plants, *e.g,* tomatoes, apples, cucumber, etc.

F W Went isolated a substance from the coleoptile tip of *Avena sativa*, which is capable of promoting the cell elongation, phototropic curvature and growth.

18 **(b)**

The phenomenon of photoperiodism was first discovered by **Garner** and **Allard** (1920-1922). They observed that maryland mammoth variety of tobacco could be made to flower only by reducing the light hours with artificial darkening.

19 **(b)**

During the phase of elongation/enlargement the cell wall of the enlarging cell shows plastic extension through enzymatic loosening of microfibrils and deposition of new material. This deposition of new material into cell wall is called intussusceptions

20 **(a)**

The term 'auxin' is applied to the indole-3-acetic acid (IAA) and to other natural and synthetic compounds having certain growth regulating properties. NAA Naphthalane Acetic Acid (NAA) and 2,4-D (2,4-dichlorophenoxyacetic acid) have been isolated from plants. All these auxins have been used extensively in agricultural and horticultural practices.

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**A**	**C**	**B**	**D**	**D**	**C**	**D**	**C**	**B**	**A**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**C**	**A**	**C**	**B**	**A**	**D**	**D**	**B**	**B**	**A**